

IN THE SPECIFICATION:

Please replace the paragraph entitled "ABSTRACT OF THE DISCLOSURE" with the following amended paragraph:

The present invention provides an ion implantation method which can achieve sufficient throughput by increasing a beam current even in the case of ions with a small mass number or low-energy ions, an SOI wafer manufacturing method, and an ion implantation system. When ions are implanted by irradiating a semiconductor substrate with an ion beam, predetermined gas is excited in a pressure-reduced chamber to generate plasma containing predetermined ions, a magnetic field is formed by a solenoid coil or the like along an extraction direction when the ions are extracted to the outside of the chamber, and the ions are extracted from the chamber with predetermined extraction energy. The formation of the magnetic field promotes ion extraction, but this magnetic field has no influence on an advancing direction of the extracted ions. Therefore, the ion beam current can be kept at a high level to contribute to the ion implantation.

Please replace paragraph [0012] with the following amended paragraph:

[0012] As described above, by forming the magnetic field along the ion extraction direction when the ions are extracted to the outside of the chamber, the ion extraction is promoted by the magnetic field, thereby improving an ion beam current. At this time, since the magnetic field has no influence on an advancing direction of the extracted ions, the ion advancing direction is substantially maintained in the ion extraction direction (i.e., direction of the magnetic field). Thus, a phenomenon that the extracted ions are bent by the magnetic field to collide against the extraction electrode and the like does not occur. Therefore, since the extracted ions are implanted while the beam current is kept at a high level, it is possible to achieve sufficiently high throughput even in implanting ions with a small mass number or low-energy ions in the semiconductor substrate.